

Claims

- [c1] 1. A device for controlling or regulating total auxiliary brake torque in a motor vehicle, wherein said device comprises:
transmission components (2, 3, 5, 7, 9) coupled to an engine (1) and at least two drive wheels (8);
at least one first auxiliary brake (4) of a first type and at least one second auxiliary brake (6) of a second type that is different from the first type, the second auxiliary brake (6) being a retarder (6);
a control system (10, 17) for controlling the first and second auxiliary brakes and in which information on characteristics of the respective auxiliary brakes (4, 6) and at least one predefined limit value for maximally permitted auxiliary brake torque are stored, the control system (10, 17) being configured so that, if one of (1) the predefined limit value is exceeded and (2) a request is made for a brake force from the auxiliary brakes (4, 6) to be moderated, the control system (10, 17) effects an adjustment to the magnitude of braking torque imposed by the retarder (6).
- [c2] 2. The device as recited in claim 1, wherein said adjustment to the magnitude of braking torque imposed by the retarder (6) is a turning down of the magnitude of braking torque imposed by the retarder (6).
- [c3] 3. The device as recited in claim 1, wherein said adjustment to the magnitude of braking torque imposed by the retarder (6) is a moderation of the magnitude of braking torque imposed by the retarder (6).
- [c4] 4. The device as recited in any one of claims 1-3, wherein, in the case where the adjustment to the magnitude of braking torque imposed by the retarder (6) is not sufficient to get below the limit value, the control system

(10, 17) also effects an adjustment to the magnitude of braking torque imposed by the first auxiliary brake (4).

[c5] 5. The device as recited in claim 4, wherein said adjustment to the magnitude of braking torque imposed by the first auxiliary brake (4) is a turning down of the magnitude of braking torque imposed by the first auxiliary brake (4).

[c6] 6. The device as recited in claim 4, wherein said adjustment to the magnitude of braking torque imposed by the first auxiliary brake (4) is a moderation of the magnitude of braking torque imposed by the first auxiliary brake (4).

[c7] 7. The device as recited in any one of claims 1-3, wherein the first auxiliary brake (4) is configured as an engine brake (4).

[c8] 8. The device as recited in any one of claims 1-3, wherein the first auxiliary brake (4) is configured as an Integrated Starter Generator.

[c9] 9. The device as recited in any one of claims 1-3, wherein the second auxiliary brake (6) is configured as a hydrodynamic retarder (6) that utilizes a cooling system of the vehicle to cool the hydrodynamic retarder (6).

[c10] 10. The device as recited in any one of claims 1-3, wherein the second auxiliary brake (6) is configured as an electromagnetic retarder (6) that acquires worsened braking effect with increased working temperature.

[c11] 11. The device as recited in any one of claims 1-3, wherein a transmission component (2, 3, 5, 7, 9) having a lowest torque capacity determines the predefined limit value.

[c12] 12. The device as recited in claim 11, further comprising:
a torque-measuring device (22) coupled to the control system (10), said
torque-measuring device (22) being is fitted to the transmission
component having the lowest torque capacity.

[c13] 13. The device as recited in any one of claims 1-3, further comprising:
information channels coupled to the control system (17) and through
which the control system (17) receives information on at least one of:
vehicle speed (25), gear ratio (20, 25), vehicle weight (30), road gradient
(31) and road resistance (32).